

1 LIGHTED RING TOY WITH CONSUMABLE PORTION

BACKGROUND OF THE INVENTION

5 There are several varieties of lighted toys that hold candies or other consumable substances. However, these toys do not allow the user to wear the toy on their finger like a ring while the consumable is lighted. Further, such toys are often large and complex and therefore may be expensive to manufacture.

10 SUMMARY OF THE INVENTION

15 The present invention relates to a lighted ring toy that entertains the user while a consumable supported by the toy is consumed. The user activates the lighting feature of the toy by removing a circuit-interrupting insulator. Once the insulator is removed and the circuit is closed, a power source causes a light located inside a housing to illuminate the consumable for a period of time required for the user to consume at least a portion of the consumable. The device is simple and inexpensive to manufacture.

20 In one embodiment, the lighted ring toy of the invention has: a housing containing a power source and an electrical circuit, the housing having an upwardly extending portion for supporting a consumable portion; a finger-grasping portion extending from the housing for engagement with the finger of a user; and an illuminating element connectable to the electrical circuit and the power source to illuminate the consumable portion. In a particular embodiment, the electrical circuit may have at least one electrical contact for completing the circuit in a contacting position thereof, and the ring toy may further comprise a removable insulator disposed adjacent the electrical contact in a non-contacting

1 position to interrupt the electrical circuit. The power
source may be configured to illuminate the consumable portion
for a preselected period of time sufficient to consume it, and
thereafter to expire.

5 BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be more readily understood from the
following specification and by reference to the accompanying
drawings forming a part thereof, wherein an example of the
invention is shown and in which:

10 FIG. 1 is an elevational view of a lighted ring toy
according to an embodiment of the present invention;

FIG. 2 is an exploded perspective view of the toy of
FIG. 1;

15 FIG. 3 is a vertical cross-sectional view of the toy
taken along the line 3-3 of FIG. 1, showing one possible
internal configuration;

FIG. 4 is an internal view of the toy as seen in the
direction 4-4 of FIG. 3, with the top portion of the housing,
the batteries, and the insulator removed;

20 FIG. 5 is a schematic of the electrical circuit of the
toy of FIG. 1 in the illustrated embodiment of the invention
utilizing a flashing light emitting diode (LED);

FIG. 6 is a schematic of a configuration of the
electrical circuit of the invention in another embodiment of
the invention utilizing a non-flashing LED and a separate
flasher circuit; and

25 FIGS. 7A-7F illustrate alternative possible designs of
the consumable mountable on the lighted ring of the invention.

1 DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, FIGs. 1, 2 and 3 illustrate a lighted ring toy 10 according to one embodiment of the invention. The ring toy 10 is constructed to be worn
5 as a ring, rather than grasped by the user's hand, and includes a consumable 12 illuminated by a battery-powered light source 14 (FIG. 2). In the illustrated embodiment, the light source 14 is contained within a ring-shaped housing 16 upon which the consumable 12 is mounted. The housing 16 contains an electrical circuit 18 and a power source 20 which
10 cause the illumination effect to occur. The housing 16 has an opening 22 (FIG. 3) through which a removable insulator 24 passes to interrupt the electrical circuit 18. Removal of the insulator 24 allows the electrical circuit 18 to be completed, creating the illumination effect of the toy and thereby amusing a user during consumption of the consumable 12.

15 The consumable 12 mounted on the toy can be sucker candy, gummy candy, or any other food product through which illumination of the light source 14 can be seen to amuse the user. It can also have a wide variety of shapes and colors intended to amuse the user when it is illuminated. A few
20 examples of the shapes for the consumable 12 are illustrated in FIGs 7A through 7F and identified by the numerals 12A through 12F respectively.

The consumable 12 has an opening 25 (FIG. 3) that receives an upwardly-extending portion 26 of the housing 16 to hold the consumable 12 in place. The upwardly extending
25 portion 26 preferably has a plurality of inclined ribs 26' on its outer surface with undercut portions 26" to ensure that the consumable 12 remains in place at the housing 16 during consumption. When a resilient material such as gummy candy is used for the consumable 12, the opening 25 in the consumable

1 may be somewhat smaller in diameter than the portion of the
housing to be received within it to enhance friction and
thereby retain the candy in place.

5 The light source 14 can be a light emitting diode ("LED")
or any other suitable device for producing light in response
to electrical power from the power source 20. The light
source 14 can be of either the flashing or non-flashing type.

Referring more specifically to FIG. 3, in the illustrated
embodiment the upwardly-extending portion 26 of the housing 16
contains the light source 14 and supports the consumable 12.
10 While the material of the upwardly-extending portion 26 is
limited by the need to transmit at least a portion of the
light emanating from the light source to achieve the desired
visual effect, the remainder of the housing 16 is not so
limited and can be made of any other suitable material.
15 Although the figures show a particular shape for the
upwardly-extending portion 26, alternatively, it can have any
other shape suitable for supporting the consumable 12 and
housing the light source 14.

As shown, the housing 16 may be made of two different
parts joined together to contain the power source 20, the
20 electrical circuit 18, and the light source 14 of the toy 10.
These two parts can be joined together by a snapping
structure, by an adhesive, or by any other suitable method.

In the illustrated embodiment, the housing 16 includes a
boss 28 at the base of the upwardly-extending portion 26 for
supporting the consumable 12. The boss 28 has a peripheral
25 lip 29' that engages the outer edge of the consumable 12,
giving the combination a pleasing, uniform appearance and
effectively supporting the weight of the consumable. In some
cases, an interior void 28" is provided adjacent the base of
the stem 26 to permit expansion of the candy upon curing. The

1 housing 16 can be shaped in any way that provides sufficient
space for the electrical circuit 18, the power source 20, and
the light source 14. The embodiment shown in the drawings
comprises a form of hexagonal pyramid whose vertex is replaced
5 by the upwardly-extending portion 26 of the housing 16. This
gives the housing an enlarged lateral dimension.

A finger-grasping portion 30 of the embodiment shown in
the figures extends from the bottom of the housing 16. The
finger-grasping portion 30 includes a horizontal plate 32 that
joins with the remainder of the housing to support the
10 electrical circuit 18 and the power source 20. A race track
shaped abutment 34 extends upward from the horizontal plate 32
to hold in place the power source 20, represented in the
drawings by two button cell batteries. The abutment 34
includes two inward extensions 36 that create a pair of
15 recesses for receiving the button cell batteries, and a narrow
gap 37 (FIGs. 2 and 4) along the floor of the plate 32.

First and second contact portions 38" and 39" are
disposed within the recesses directly below the batteries.
The first contact portion 38 has an finger 38' which extends
through the gap 37 and against a vertical tab 39' of the
20 second contact portion 39. The two contact portions are also
provided with central spring arms 38' and 39', respectively,
which urge the batteries upwardly. The finger 38' of the
contact portion 38 is configured to contact and press against
the tab 39' of the contact portion 39 when the insulator 24 is
removed from the opening 22.

25 In the embodiment shown in the figures, the button cell
batteries are disposed in opposite directions so they are
connected in series with each other and with the light source
14 when the contact portion 38 touches the contact portion 39.
To avoid shorting of the battery terminals, a ring 41 of

1 insulating material is disposed underneath the inverted
battery along its peripheral edge. The light source 14 is
connected to the batteries by leads 42 and 43, which pass
through and are attached to a small circuit board or wiring
5 board 40 for support. The ends of the leads 42 and 43 extend
from the bottom of the circuit board where they make
electrical contact with opposite poles of the two batteries.
The electrical circuit 18 therefore comprises the light source
14, the power source 20, the first and second contact portions
38 and 39, and the leads 42 and 43.

10 The board 40 can vary in complexity in different
embodiments of the invention. In the embodiment of FIGS. 1-3,
the board 40 merely anchors the leads 42 and 43 and supports
the light source 14. In that case, the schematic of the
lighted ring toy 10 can be as illustrated in FIG. 5. The
15 light source 14 may then be a flashing LED of the type
available under the commercial designation MT-F406, which is
powered by two series-connected batteries of the type
identified commercially as LR41 button cells. In this
embodiment, the LED 14 is connected across the
series-connected batteries 20 such that removal of the
20 insulator strip 24 in the direction indicated completes the
circuit and causes the LED to flash until the batteries are
discharged.

According to the schematic of FIG. 6, which depicts an
alternative embodiment of the invention (10'), the board 40 may
comprise a circuit 45 that provides, in addition to physical
25 support, lighting effects such as flashing of the light source
14. In this embodiment, the circuit 45 may be an integrated
circuit of the type available commercially under the
designation A5403-01 which, in the illustrated configuration,
intermittently applies the voltage of the batteries 20 across

1 the LED 14 to produce a flashing light effect. In this
embodiment, the light source may be a non-flashing LED
available commercially under the designation, 3R4SDB-4.

5 Now, considering the battery circuit in greater detail,
the negative terminal of each button cell battery is the
discrete circular terminal on one of its ends, and the
positive terminal includes the side and bottom surfaces of the
battery. One battery is inverted relative to the other, and
the central spring arm 38" of the contact portion 38 contacts
the negative terminal of the inverted battery while the
10 positive terminal is separated from the contact portion 38 by
the insulator ring 41. In this configuration, the finger 38'
of the first contact portion is urged toward the tab 39',
which is in contact with the positive terminal of the
non-inverted battery but is initially prevented from
contacting it by the insulator 24. Removal of the insulator
15 24 allows the finger 38' to touch the tab 39', completing the
circuit to apply the combined voltages of the two batteries
across the leads of the light source 14.

The contact portions 38 and 39 may be made of copper,
steel or other resilient conductive material, causing the
20 finger 38' to press against the insulator 24 with sufficient
force to hold it in place while at the same time permitting
the insulator to be removed by manually pulling it downwardly
from the housing 16. In one embodiment, the first elongated
contact portion 38 is rounded or bent at its point of contact
with the insulator 24 so that the insulator 24 can be removed
25 without tearing or becoming jammed in the housing 16.

The insulator 24 and the insulating ring 41 may each be
made of any suitable insulating material, such as coated paper
or a sheet of suitable synthetic polymeric material. In one

1 particular embodiment, the material may be the type available
commercially under the trademark Mylar.

5 The preceding description has been presented with
reference to presently preferred embodiments of the invention.
These should not be construed as limitations on the scope of
the invention, but rather as examples of the embodiments
thereof. Alterations and changes in the described structure
may be practiced without meaningfully departing from the scope
and spirit of the invention.

10 For example, the circuit board 40 may, in its more
complex embodiments, take the form of a printed circuit board
having discrete electronic components mounted thereon, an
integrated circuit, or a hybrid circuit comprising both
discrete components and one or more integrated circuits.
Accordingly, the scope of the invention should be determined
not by the embodiments illustrated, but by the appended claims
15 and their equivalents.